BAT54J / W / AW / CW / SW

SMALL SIGNAL SCHOTTKY DIODE

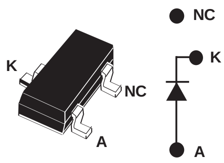
FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- SURFACE MOUNT DEVICE

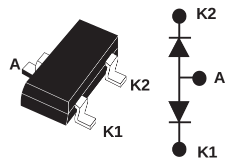
DESCRIPTION

Schottky barrier diodes encapsulated either in SOT-323 or SOD-323 small SMD packages.

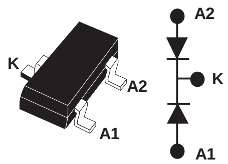
Single and double diodes with different pining are available.



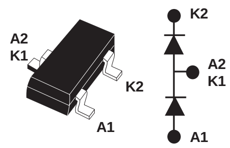
BAT54W



BAT54AW



BAT54CW



BAT54SW

SOT-323



BAT54J

SOD-323

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		30	V
I_F	Continuous forward current		0.3	A
I_{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	1	A
P_{tot}	Power dissipation (note 1) Tamb = 25°C	SOD-323	230	mW
		SOT-323		
T_{stg}	Maximum storage temperature range		- 65 to +150	°C
Tj	Maximum operating junction temperature *		150	°C
T_L	Maximum temperature for soldering during 10s		260	°C

Note 1: for double diodes, Ptot is the total dissipation of both diodes

* : $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

June 1999 - Ed: 2A

THERMAL RESISTANCE

Symbol	Parameters		Value	Unit
$R_{th\ (j-a)}$	Junction to ambient (*)	SOD-323	550	°C/W
		SOT-323		°C/W

(*) Mounted on epoxy board, with recommended pad layout.

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameters	Tests conditions		Min.	Typ.	Max.	Unit
V_F *	Forward voltage drop	Tj = 25°C	I_F = 0.1 mA			240	mV
			I_F = 1 mA			320	
			I_F = 10 mA			400	
			I_F = 30 mA			500	
			I_F = 100 mA			900	
I_R **	Reverse leakage current	Tj = 25°C	V_R = 30 V			1	µA
		Tj = 100°C				100	

Pulse test : * tp = 380 µs, δ < 2%
** tp = 5 ms, δ < 2%

DYNAMIC CHARACTERISTICS (Tj = 25 °C)

Symbol	Parameters	Tests conditions	Min.	Typ.	Max.	Unit
C	Junction capacitance	Tj = 25°C V_R = 1 V F = 1 MHz			10	pF
t_{rr}	Reverse recovery time	I_F = 10 mA I_R = 10 mA Tj = 25°C I_{rr} = 1 mA R_L = 100 Ω			5	ns

Fig. 1-1: Forward voltage drop versus forward current (typical values, low level).

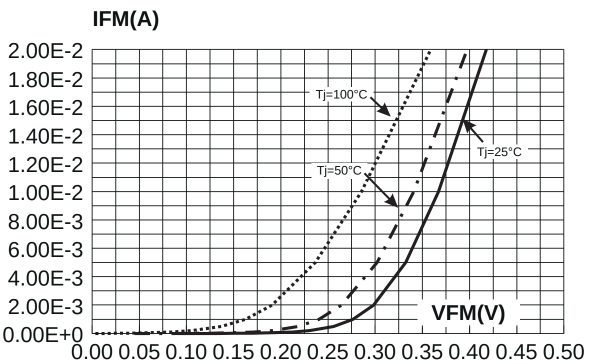


Fig. 1-2: Forward voltage drop versus forward current (typical values, high level).

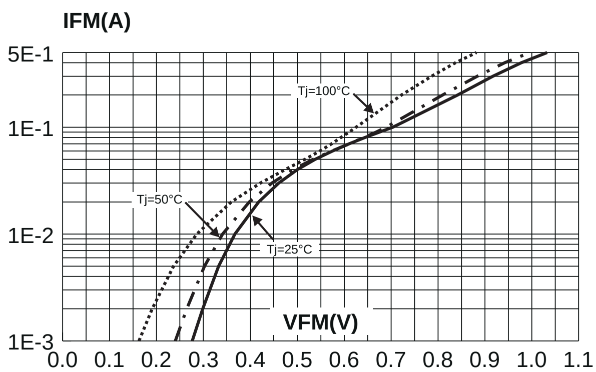


Fig. 2: Reverse leakage current versus reverse voltage applied (typical values).

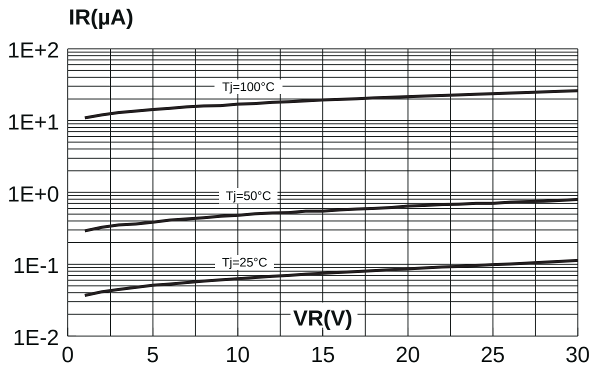


Fig. 3: Reverse leakage current versus junction temperature.

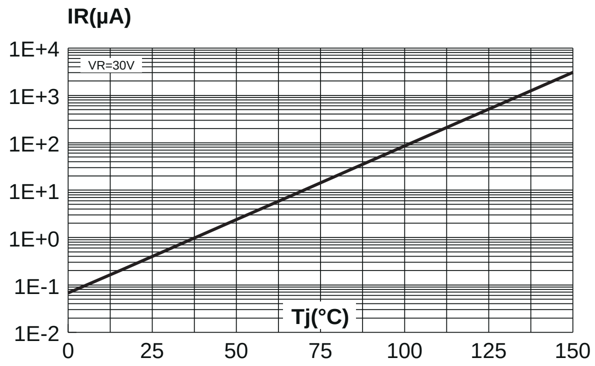


Fig. 4: Junction capacitance versus reverse voltage applied (typical values).

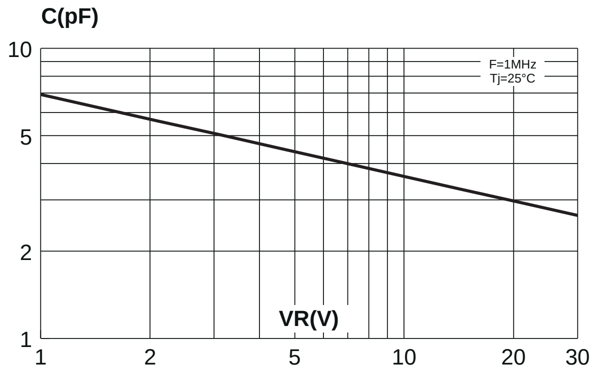


Fig. 5: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy FR4 with recommended pad layout, e(Cu)=35µm)

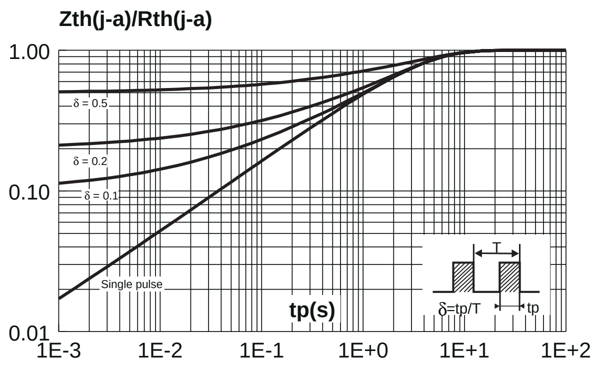
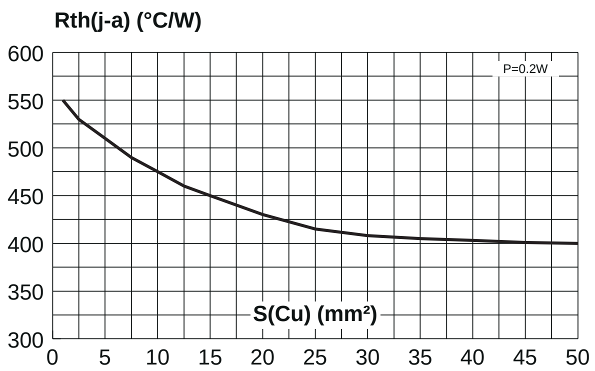
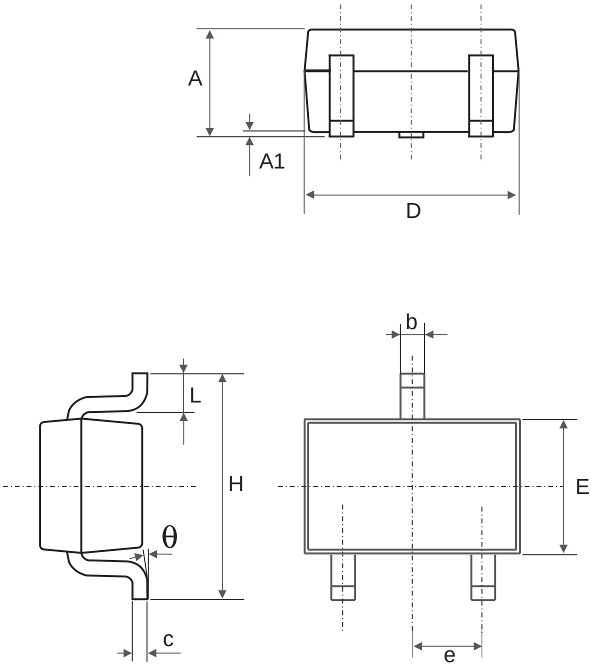


Fig. 6: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35µm.)

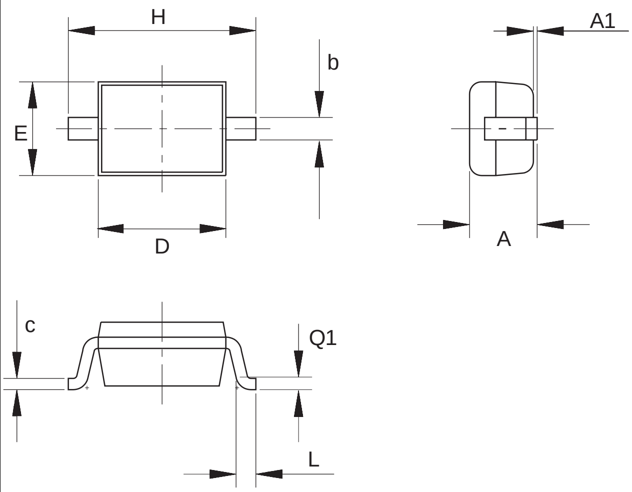


PACKAGE MECHANICAL DATA
SOT-323



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.8		1.1	0.031		0.043
A1	0.0		0.1	0.0		0.004
b	0.25		0.4	0.010		0.016
c	0.1		0.26	0.004		0.010
D	1.8	2.0	2.2	0.071	0.079	0.086
E	1.15	1.25	1.35	0.045	0.049	0.053
e		0.65			0.026	
H	1.8	2.1	2.4	0.071	0.083	0.094
L	0.1	0.2	0.3	0.004	0.008	0.012
θ	0		30°	0		30°

PACKAGE MECHANICAL DATA
SOD-323



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		1.17		0.046
A1	0	0.1	0	0.004
b	0.25	0.44	0.01	0.017
c	0.1	0.25	0.004	0.01
D	1.52	1.8	0.06	0.071
E	1.11	1.45	0.044	0.057
H	2.3	2.7	0.09	0.106
L	0.1	0.46	0.004	0.02
Q1	0.1	0.41	0.004	0.016

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BAT54W	D73	SOT-323	0.006g	3000	Tape & reel
BAT54AW	D74	SOT-323	0.006g	3000	Tape & reel
BAT54CW	D77	SOT-323	0.006g	3000	Tape & reel
BAT54SW	D78	SOT-323	0.006g	3000	Tape & reel
BAT54J	86	SOD-323	0.005g	3000	Tape & reel

- Epoxy meets UL94,V0

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